

CLAIMS

1. A method for the production of retinal cells, useful in transplantation therapy, comprising the steps of:
 - (i) obtaining one or more mammalian adult Müller cells; and
 - 5 (ii) culturing the cells in the presence of an extracellular matrix protein and a growth factor to thereby induce dedifferentiation of the Müller cells into a progenitor phenotype.
2. A method according to claim 1, wherein the extracellular matrix protein is fibronectin and the growth factor is EGF.
- 10 3. A method according to claim 1 or claim 2, wherein the cells are human Müller cells.
4. A method according to any preceding claim, wherein the dedifferentiated cells are further cultured in the presence of an extracellular matrix protein and differentiation agents, to thereby induce the dedifferentiated cells to adopt a
15 specific differentiated cell phenotype.
5. A method according to claim 4, wherein the extracellular matrix is matrigel, fibronectin, collagen or laminin, and the differentiation agents are FGF-2, retinoic acid, 3,3',5-Triiodo-L-Thyronine, insulin, insulin-like growth factor or TGF β .
- 20 6. A composition comprising cells obtainable by a method as defined in any preceding claim.
7. A composition according to claim 6, for therapeutic use.
8. Use of a retinal cell obtainable by a method as defined in any of claims 1 to 5, in the manufacture of a medicament for the treatment of a condition
25 associated with cell loss or cell damage.
9. Use according to claim 8, wherein the cell is a human cell.
10. Use according to claim 8 or claim 9, wherein the retinal cell is a pluripotent Müller stem cell.
11. Use according to any of claims 8 to 10, wherein the condition is
30 associated with cell loss or damage in a mammalian eye.
12. Use according to any of claims 8 to 11, wherein the condition to be treated is selected from the group consisting of: age-related macular degeneration,

proliferative diabetic retinopathy, proliferative vitreoretinopathy, retinal detachment, retinitis pigmentosa, glaucoma and optic nerve injury and degeneration.

13. Use according to any of claims 8 to 12, wherein the cells are autologous
5 cells, derived from the patient to be treated, heterologous cells stored in a cell bank, or genetically modified cells derived from the patient or cell bank.

14. Use of a composition comprising a matrix protein and one or more growth factors, in the manufacture of a medicament for administration to a damaged eye, to repair the damage.

10 15. A structure for grafting to a patient, the structure comprising multiple layers of a matrix supporting material onto which is incorporated a plurality of retinal neurons, the retinal neurons of one layer may be of the same or different phenotype to those of other layers.